Mass Marking of Juvenile Chinook Salmon with Florescent Dye: Resurrection of an Old Tool and Potential Applications for Studies in the Nearshore

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Abstract
Florescent dye spray marking has been used since the 1960s to mark large numbers of juvenile salmonids with an easily detectable mark at low mortality. We felt that this approach could potentially help us answer key questions about the ecology of juvenile chinook salmon in nearshore areas of Puget Sound. However, there was little data on how to mark chinook with this approach; historically used equipment had degraded or been lost, and old sources of pigment had disappeared. In addition, handling chinook and maintaining low mortality is a challenge. As a result, we decided to redevelop this approach specifically for chinook. Best retention and mortality rates were obtained with a setting of 120 PSI sprayed from 19 inches from the fish, shortly after adipose fin removal, which facilitated pigment entrainment under fish's scales. We were able to mark more than 5000 fish an hour. Mark retention was 96%, 48 hrs post marking and handling mortality was <1% by marking chinook > 3 weeks before smolting. Three months post marking, retention had not changed and mortality was no different than unmarked fish. We successfully marked 120,000 juvenile chinook that were released into Sinclair Inlet to gain insight into residence time in the area and patterns of habitat use.